

Tagging studies

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Abstract

Since the International Pacific Halibut Commission began tagging halibut in 1925, over 450,000 tagged halibut have been released and more than 50,000 of these releases have been recovered. Halibut are tagged to study migration, utilization, age, growth, and mortality. Forty-eight tagged halibut were recaptured in 2011. These recoveries represented several different IPHC experiments and sport tag releases.

Introduction

Since the International Pacific Halibut Commission (IPHC) began tagging in 1925, over 450,000 tagged halibut have been released. To date, more than 50,000 of these releases have been recovered. Halibut are tagged to study migration, utilization, age, growth, and mortality.

Tag releases

The IPHC tagged and released 30 halibut with geomagnetic-sensing archival tags in 2011. Two models of geomagnetic-sensing archival tag were used: one tag type attached externally to the dorsal musculature and the other type was implanted internally within the coelomic cavity. Twenty-six of the fish were tagged with both models of tag and four fish received only an external archival tag. These releases, which took place in Areas 2C and 3A, are discussed in detail in Loher and Nielsen (2012).

Tag recoveries

A total of 28 halibut from various IPHC tagging experiments was recaptured in 2011, as well as 20 tags from sport tagging programs. Recoveries by experiment or tag type are discussed in the next section. Total release and recovery numbers for the most recent major IPHC tagging experiments are presented in Table 1.

Recoveries from experiments using wire tags only

In 2011, one tag from the 1995 trawl mortality study (Williams and Erickson 1996) was recovered and 11 tags from the 2010 Aleutian wire tagging study (Loher 2011) were recovered.

Recoveries from experiments using passive integrated transponder (PIT) tags

Two large PIT tag experiments were conducted in 2003 and 2004 (Kaimmer and Geernaert 2004, Williams et al. 2005), with over 67,000 tags released between the two experiments. PIT tags were released in all setline survey regions in 2003 and in Regulatory Areas 2B and 3A in 2004. A double-tag experiment using both external wire and internal PIT tags took place during September 2003 in Hecate Strait, BC to evaluate the *in situ* PIT tag shedding rate. Each fish in this study was tagged with both an external wire tag (in the standard location on the operculum of the dark side) and an internal PIT tag (over the interopercular bone on the white side). Between 2003

and 2009, samplers in major landing ports used handheld tag readers to scan individual halibut from commercial landings for the presence of PIT tags. Recovered double-tagged fish were also scanned. Since 2009, halibut have not been scanned in the field, but PIT tags are collected along with the wire tags from double-tagged fish and later scanned in the Seattle office. There were three recoveries from the 2003 double-tag experiment this year and both tags were recovered from all three fish. Of the 726 fish recovered to date from the double-tag study, 702 were scanned to determine whether their PIT tags were working (Table 2). Fifteen PIT tags were found to have shed and an additional two were present but broken for a combined shedding/breakage rate of 2.4%. If a PIT tag was found during scanning, the head was examined for a wire tag. Through 2009, wire tags were found to have shed from 40 recovered double-tagged fish for a shedding rate of 6%.

In 2011, one PIT tag was recovered by a plant worker while checking halibut. The tag was from the 2004 PIT tag release in Area 3A.

Recoveries from pop-up satellite transmitting archival (PAT) tag experiments

In 2011, one halibut with an attached PAT tag body was recovered from the 2009 Bering Sea dispersal experiment (Loher and Clark 2011); this PAT tag was damaged and failed to pop up in 2010. Two halibut with PAT tag leaders were recovered: one leader was from the 2008 Bering Sea dispersal experiment (Loher and Clark 2010); the number on the other leader was worn off and could not be identified to experiment or release year. In addition, one satellite body that had previously detached and popped up was recovered washed ashore in the Aleutians.

Recoveries from archival and dummy archival tag experiments

Nine tagged fish from the 2009 wire/dummy archival double-tag experiment in Area 3A (Loher and Geernaert 2010) were recovered in 2011. Five of these fish had external dummy archival tags and four had internal dummy archival tags.

Sport tag recoveries

The IPHC continued to provide tags on a cost-recovery basis for the Homer Jackpot Halibut Derby in 2011. The derby released 101 tags in 2011 and nine of those tags were recovered. Additionally, 11 tags from previous derby releases were recovered in 2011: one each from the 2003, 2005, and 2008 derbies; two from the 2009 derby, and six from the 2010 derby.

Rogue tags

Over the last 10 or so years there have been instances of unauthorized tagging and releasing of halibut in areas of Alaska and northern Washington. These unauthorized or rogue tags generally have the name of the individuals or group doing the tagging imprinted on the tags. The IPHC and staff from Alaska Department of Fish and Game (ADF&G) and National Oceanographic and Atmospheric Administration (NOAA) Fisheries enforcement have contacted these groups to request that they discontinue tagging of halibut and most have complied over the years. In 2011, one rogue tag was collected from a commercial delivery into southeast Alaska and another was collected on an IPHC survey trip in Area 3A.

References

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Table 1. Total recovery rates for the most recent major tagging experiments.

Experiment	Release year(s)	Number released	Number recovered to date	Recovery rate
Glacier Bay local movement	1992-96	1,592	207	13%
Longline mortality	1993-94	13,096	1,123	9%
Trawl mortality	1995	4,852	178	4%
Wire/PIT double-tagging (3A)	2001	281	30	11%
Wire/PIT double-tagging (2B)	2003	2,661	726	27%
PIT tagging (coastwide)	2003	43,999	2,266	5%
PIT tagging (2B and 3A)	2004	23,437	1,179	5%
PAT tagging Gulf spawning	2002	12	0*	0%
PAT tagging Bering Sea spawning	2002	11	0*	0%
PAT tagging Bering Sea spawning	2004	25	1*	4%
PAT tagging Gulf migration timing	2005	49	15*	31%
PAT tagging Bering Sea spawning	2006	24	2*	8%
PAT tagging Area 2 dispersal	2006	78	12*	15%
PAT tagging Bering Sea dispersal	2008	115	4*	4%
PAT tagging Bering Sea dispersal	2009	17	1*	6%
Archival tagging (2B)	2008	166	21	13%
Wire/dummy archival double-tagging	2009	200	36	18%
Aleutian wire tagging	2010	773	13	2%
Geo-magnetic sensing archival	2011	30	0	0%

* refers to physical recovery of tagged fish, not pop-up data broadcast to satellite

Table 2. Recoveries of fish released in the 2003 wire/PIT double-tag experiment by recovery year and condition of PIT or wire tag.

	Recovery year									Total
	2003	2004	2005	2006	2007	2008	2009	2010	2011	
Number recovered	20	233	178	158	73	35	16	10	3	726
Head not scanned		6	5	10	1	1	1			24
PIT tag shed		5	3	3	2	1	1			15
PIT tag broken		2								2
Wire tag shed		3	6	20	8	1	2			40
Head not examined for wire tag			3							3